George. (A)

ART. VIII.—*The Ecraseur Linéaire of M. Chassaignac.* By A. GEORGE, M. D., of Baltimore. (With three wood-cuts.)

AT a meeting of the Chirurgical Society of Paris, held in 1850, a memoir was presented by M. Chassaignac, relative to an instrument of his invention, then in course of improvement, and called by him the metallic articulated ligature. He had in his practice met with those difficulties which all surgeons have experienced in the use of the ligature as applied for the removal of portions of tissue, tumours, etc., in the great length of time their action requires, and the limited strength even the best of them possess. Yet being aware that under certain circumstances the knife cannot safely be applied, he had endeavoured to unite in this instrument the security of the ligature with the rapidity of the bistoury, and if we may judge from the opinion of the society, expressed after witnessing his experiments, he had succeeded. Since that period the instrument has undergone considerable modifications, and in the hands of Mathieu, has been made more powerful, graceful, and altogether better adapted to its purpose.

To facilitate the description, I have added two diagrams. In Fig. 1 is seen, "B," the barrel or sheath of a flattened form, and in length from six inches to ten or more, with a bore of about $\frac{1}{2}$ by $\frac{1}{4}$ inch or larger, in proportion as the sheath is longer. It is open or free at both ends, but at one extremity is arranged the wooden handle "A." Within the barrel, and running its whole length as well as that of the wooden handle, are two strong rods, which slide in each other by means of grooves, as shown in Fig. 2. At

one end these rods fasten by small pivots to the chain "C," at the other is opened the steel handle or lever "F," which being alternately raised and depressed in a see-saw manner, communicates an advancing movement to each rod in turn, the extent of this advance being governed by the catches "D" on each side the barrel which play into the teeth of the rods. In this way a sawing or rubbing movement is given to the chain, whose advance is further influenced by the greater or less *width* of the teeth just mentioned.

Fig. 1.

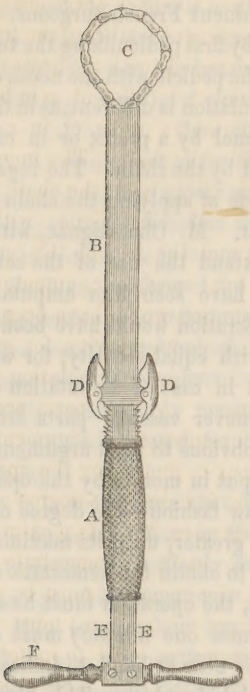
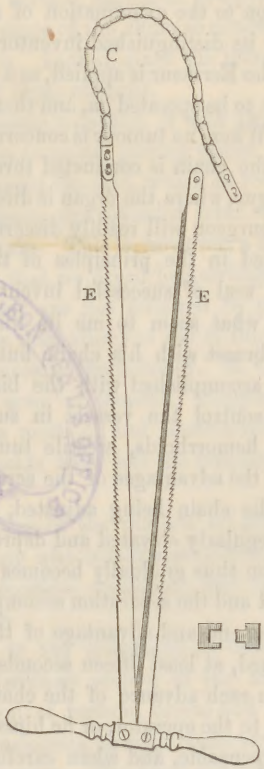


Fig. 2.



The chain is made precisely as is the ordinary chain saw, with the exception of the teeth, and is stronger and heavier, with each edge equally obtuse, except for certain purposes when the inner or cutting edge is somewhat bevelled. The interior arrangement and the joining of the several parts, will be understood by a glance at Fig. 2. Fig. 1 represents the instrument ready for use. It is obvious that its mechanical arrangement is one affording the operator great power, as great perhaps as may be attained by any instrument of manageable dimensions.

The mode of action of the common ligature is too well known to need more

than a reference here, and every favourable condition fulfilled by it is carried out by the chain, with this addition, that the supremacy of the latter begins to manifest itself when the ligature becomes powerless. The strongest ligatures we possess simply condense; the chain rapidly reaches the maximum of condensation, and division follows.

It might, perhaps, not be uninteresting to speak more in detail of the physiological action of the Ecraseur, and describe some experiments illustrative of its power, but I can here do no more than indicate its prominent features and advantages, and I shall be satisfied if I but draw the attention of the profession to the examination of an instrument I have seen so successfully used by its distinguished inventor and other eminent French surgeons.

1. The Ecraseur is applied, as a general rule, by first pediculizing the tumour or tissue to be operated on, and then embracing the pedicle with the noose of the chain. Where no tumour is concerned the manipulation is different, as in fistula, where the chain is conducted through the channel by a probe, or in case of the tongue, where the organ is directly embraced by the chain. The ingenuity of the surgeon will readily discern the best mode of applying the chain when instructed in the principles of the instrument. M. Chassaignac, with the natural zeal of successful invention, would extend the use of the ecraseur beyond what seem to me its limits; thus, I have seen him amputate the female breast with his chain, but the same operation would have been more rapidly accomplished with the bistoury, and with equal security, for we can readily control the vessels in such parts, but in case of amputation of the tongue, hemorrhoids, erectile tumours, or whenever vascular parts are concerned, the advantages of the ecraseur are too obvious to need argument.

2. The chain being adjusted, the lever is put in motion by the operator, being regularly elevated and depressed in see-saw fashion—the degree of condensation thus gradually becomes greater and greater, until its maximum is attained and the separation accomplished. But to obtain the hemostatic effect, the great end and advantage of the instrument, the operation must be slowly performed, at least fifteen seconds (and sometimes one minute) must elapse between each advance of the chain. An aid is near at hand to indicate the periods to the operator, or he himself has a watch before him. This procedure is indispensable, and when carefully observed I have never seen any other than a favourable result. The duration of an operation, therefore, depends upon the mass and density of the tissue, but from five to ten minutes will ordinarily suffice for most cases; the amputation of the tongue in totality demands, however, twenty minutes to half an hour. If two instruments be used simultaneously, of course the time will be diminished by one-half. If too rapid a movement be given the handle, we approach the conditions of excision by a too prompt division of the pedicle, with this exception, that solutions of continuity effected by the ecraseur are much less liable to hemorrhage than those produced by the knife. But by a gradual action the coagula have time to form, the tissues are gently separated, and the operation

concluded without loss of blood. This closing of the vessels is, moreover, permanent. The after-treatment must of course be conducted upon general principles; most commonly M. C. uses for local application a little starch-flour thrown upon the wound if small, and glycerine, where the surface exposed is larger.

3. As the chain carries the compression of a tissue to its maximum before performing its division, the wound must necessarily be reduced to its smallest limit, and is far less than that caused by any other process.

4. The pain which we might suppose, *à priori*, would be intense, is probably no greater than under the knife after a certain degree of compression is reached, and the action is so gradual, the advance of the chain so almost imperceptible, that all *shock* is spared the patient. Indeed, since the introduction of chloroform, pain has become a matter of little moment.

5. When a mass is of great size, it is better to attack it with two instruments; dividing it. Care should be taken to avoid getting pieces of bone within the chain, and as far as possible to avoid the skin, which on some parts of the body opposes an extraordinary resistance, and indeed in some cases it is necessary to incise it before applying the chain. This is, however, a matter of simple detention, as it is not from the skin that we dread hemorrhage.

6. Sections performed by this instrument are not followed by putridity, and the tendency to inflammation is far less than after the use of the common ligature, caustics, and indeed, in many instances, of the bistoury. M. C. reports but one case of purulent infection, and none of tetanus. Suppuration is generally considerably diminished by this method, and cicatrization rapid; many patients operated for large hemorrhoids have left the hospital on the third day.

7. It is well known that the great success of the method of lithotrity is due to its moral effect; in like manner many who would shrink from the surgeon's knife will willingly submit to a bloodless operation, and this is an advantage which experience will not deride.

8. The new method has been applied to the treatment of hemorrhoids, fistula in ano, amputation of the tongue (without section of the maxilla) at its base, phymosis, falling of rectum, polypi of rectum, uterus and naso-pharyngean, amputation of neck of uterus, varicocele, erectile tumours, extirpation of tonsils and testicle, and various tumours. The head and trunk of the fœtus have also been separated in utero.

It is impossible to predict to what extent the application of the principle of the ecraseur may be carried; whether it will ever take its place among the apparatus for the greater operations may be doubted, but every probability exists that it will supersede the common methods of treating most of the diseases mentioned. Already it has attained great popularity in France, and I am convinced that the profession in our country will be forced to admit its claims, when they have examined the question.

It is not a mere novelty, a surgical toy, but an established fact, approved by

scientific men of the first order, and basing its pretensions upon numerous trials from which it has issued triumphant.

Baltimore, *October* 3d.

[Note by the Editor.—The *écraseur* of M. Chassaignac has excited much interest among the Parisian surgeons, some of whom pronounce it to be the greatest improvement in surgery since the discovery of anæsthesia. It has also been recently used by several of the most prominent London surgeons, who seem to regard it with great favour.

The original instrument of M. Chassaignac, manufactured by Mathieu, has been improved by Luer, and also by Charrière. The essential part of the instrument is a chain so arranged that it can be forcibly tightened around the part designed to be removed. In Mathieu's and Luer's instruments, this tightening is effected by means of a rack and pinion; in Charrière's by means of a screw. The objection to the two former instruments is that the chain passes through a tube which it is difficult to clean and keep dry, and it is not passed through very easily or fastened readily. They are also more complicated and more expensive than that of Charrière. This last instrument is represented in Fig. 3.

Fig. 3.

M. Charrière has also made other improvements in the instrument. He has combined the advantages of a straight and curved instrument by making several extremities screw on one handle. He has also so contrived it that chains of various sizes can be fitted to the same instrument. The chain attached to the curved extremity has also been made with a degree of curve in its links, so that, besides being more easily applied to a tumour in a deep passage, as the vagina or rectum, it adapts itself to the channel of the instrument much more easily than the straight chain can, and is less apt to be broken when drawn home. Finally, the mode of attaching the extremities of the chain is more simple, and as traction can, if necessary, be made on both ends at once, the power is much increased.

"The action of the *écraseur*," remarks Mr. T. Spencer Wells (*Med. Times and Gaz.*, Oct. 11, 1856), "though slower than that of the knife, is much more rapid than that of the ligature, and its action is direct; not indirect like the ligature, which only divides tissues by the process of gangrene it induces. The *écraseur* first condenses the tissues it acts on, and then divides them with extreme regularity. The wound does not appear at all bruised or torn. When it acts on an artery, it first divides the two internal coats, which are folded up in such a manner as to plug the vessel. The closure is assisted by the agglutination of the outer coats, before they are divided, and after separation has been effected, the closure is so perfect that the channel cannot be opened by blowing

forcibly through it. Experiments have been made at the Veterinary School near Paris, and the carotids of sheep have been divided without loss of blood. There is nothing surprising in this, when we remember how seldom severe gunshot, lacerated, or contused wounds bleed, that a limb may be torn off by machinery, and no blood be lost; and that *bites* are very rarely attended by hemorrhage. The lower animals have no occasion to apply a ligature upon the umbilical cord of their young; they simply bite it through, and the action of the *écraseur* is much more like that of biting than of crushing."

Dr. Geo. H. Macleod, formerly surgeon to the Civil Hospital at Smyrna, and to the General Hospital in camp before Sebastopol, in a recent paper (*Medical Times and Gaz.*, Nov. 29, 1856), has given so interesting an account of M. Chassaignac's mode of procedure in the principal operations in which he employs the *écraseur*, with the results he has himself observed in a tolerably extended experience in its use, that we are induced to quote what he says on the subject:—

"It may be said generally that the chief aim of the écraseur is to supplant the ligature; and that it fulfils all the objects aimed at by the ligature in a more rapid and satisfactory manner constitutes its claims to the attention of the profession. Its latitude of action, too, it will be seen, is much greater than that of any ligature we possess. A comparison of it with the ligature may be stated thus: In obviating hemorrhage it at least stands on an equality with the ligature, as it is found so 'hermetically and solidly' to close the vessels before dividing them, by an action on their coats similar to that of the ligature, that, though I have repeatedly seen the most vascular growths removed by it, I have never, except in one solitary case, seen a drop of hemorrhage. As to the speed of action, it is greatly preferable to the ligature, which has to ulcerate its way through a tumour by a process slow and tedious enough, its very slowness being essential to its success. Further, the ligature requires, in general, tightening, causes great pain and irritation, and leaves a large suppurating surface. The écraseur, on the contrary, so compresses the parts, that the resulting raw surface is of very limited dimensions. It enables us to administer chloroform during the whole proceeding, and thus to obviate pain; and, finally, it puts in our power an amount of force unknown in any ligature we possess. In the case of nervous persons or young children, the speed with which it acts, in comparison with the ligature, holds out many advantages. In a word, it in a great measure combines the benefits of the knife and the ligature. In its results, too, the écraseur contrasts advantageously with the ligature. Without claiming for it the advantages of causing greatly less subsequent inflammation and suppuration, of never being followed by erysipelas, or hospital gangrene, or tetanus, or purulent absorption, as is so energetically declared by Chassaignac, still I must honestly confess that the disturbance caused by it has been in general very slight, and the disagreeable results few, in the cases I have had an opportunity of observing. The mode in which the vessels are closed may well be considered to form a barrier to purulent absorption.

"The essential step necessary in using the écraseur is, obviously, to form a peduncle, if the part to be removed do not already present one. This is accomplished in various ways, according to the nature of the part. If, as in tumours on the surface, the part to be removed is flat, the best mode of procedure is to raise it up, if possible, from the subjacent tissues, and so to draw it out that several long curved needles can be passed in different directions across and under its base. A ligature is then tied behind these, and a neck thus formed for the chain. This method is preferable to transfixing the base of the tumour with a double thread, and pedunculating each lateral half. The great point is to get well below the base of the tumour.

"Again, if the mass be very large, or if it be so bound to the underlying tissues as that it cannot be raised up, or if it extend into a canal, as into the rectum, then the chain is first carried under the part in one of its diameters, and made to split it in two to its utmost depth, when each lateral part is treated as separate tumours, needles passed under it, a peduncle formed by means of a ligature, and a chain made to surround each. In a word, a peduncle is to be formed in the sound parts, beyond the disease on which the chain of the instrument can be made to operate. The ligature employed should be a hard compact one, as it is least apt to get entangled in the chain, and as few turns as possible of it should be used. When the chain is firmly in place, it may be as well to cut away the thread, to obviate all fear of inconvenience.

"As the skin presents by far the greatest resistance—a resistance which, at times, is too much for the chain to overcome, its division by the knife, on the line occupied by the chain, will often be advantageous. As this incision will be but superficial, no fear of hemorrhage need be entertained. The skin may at other times be reflected from the sides of the tumour, which will serve the double end of saving integument, when such is desirable, and enabling the chain to get better below the base. Oiling the chain previous to use makes a considerable difference in its facility of action.

"One word as to the mode of passing the chain through and beneath a part. A long and very curved trocar and canula, of a calibre greater than the chain, is made to pass below the part to be split. The trocar being withdrawn, a small elastic bougie, having the chain attached to it, is made to traverse the canula, which is then removed. In this way the chain is conveyed across and under the part. If the base of the tumour be so narrow and deep that a trocar could not traverse it without including much of the sound tissues on either side, then one trocar and canula of large dimensions is introduced from one side, and a lesser from the other, in such a way that the point of the smaller may become inclosed in the larger, and thus a canal of any acuteness may be formed for the passage of the chain.

"In the use of the écraseur, it is essential to proceed with slowness and great gentleness. The holding of the instrument firmly, so that it will not shake much during use is a matter of much moment to the avoidance of hemorrhage. Though in many operations it will be sufficient to allow half or even a quarter of a minute to elapse between each movement, yet to avoid all fear of hemorrhage in the case of very vascular growths, it is well to give a minute to each link. This apparent slowness, and the absence of that 'dash' so much coveted in the surgery of this country, and which this slowness prevents, is one reason why I believe the écraseur will not make so much way as it otherwise might in England.

"Let me glance at the mode of using the écraseur in particular operations.

"The great vascularity of the tongue, and the difficulty of suppressing bleeding from it when it is extirpated, presented an obvious case for the écraseur, and certainly in such instances it possesses several advantages over the ligature, which is the only mode of operation which, in such cases, can be said to compete with it. While the ligature takes days, the écraseur accomplishes the end in a few minutes. It needs no reapplication; it does not cause the presence in the mouth of a putrid mass for days, which, notwithstanding every precaution, will continually mix its products of decomposition with the food. It enables us to give chloroform, and thus obviate that intolerable pain which accompanies the ligature, and which is so severe as to have caused some to premise the section of the nerve.

"If the whole organ is to be excised, two instruments are required. The chain of one is introduced into the mouth by means of a needle passed through an incision below the chin in the same way as Cloquet applies ligatures for accomplishing the same end. The root of the tongue is thus encircled, and cut from above downwards. The second chain introduced by the mouth is laid in the incision made by the first across the base, and is made to divide all the attachments of the organ from behind forward. Half an hour is sufficient to accomplish this operation. Half of the tongue may be removed by passing two chains through the tongue at the angle of union of the diseased with the healthy

parts, and making one chain sever the parts from behind forwards, while the second cuts its way out at right angles to the first. A smaller part may be pedunculated by passing a couple of needles through the tissues behind it, tying a ligature round so as to form a neck, and applying the chain. A small chain and the curved instrument answer best for these operations. The case referred to by Mr. Wells as having been followed by hemorrhage, I saw, with him, and am convinced the result arose from the cause given, viz., the sudden jerk of the patient's head. If chloroform had been used this could not have occurred. I have reason to think that the attendant exaggerated the frequency of subsequent bleeding in these cases. The result in the case above referred to was ultimately most satisfactory.

"Castration can be accomplished by the écraseur in two ways. The diseased gland may be drawn out from its fellow; a ligature applied above it, so as to constrict the tissues, and by means of the chain the whole removed *en masse*. Or, if the part is voluminous, two chains are passed through a canula behind the cord and vessels at the point of section, and while one is made to divide the cord, vessels, and skin transversely, the other performs the perpendicular section by which the testicle is divided from its fellow. The loss of integument is apparently an objection to this procedure, but the results on this head were ultimately very satisfactory in the cases I have had the means of observing. There was not a drop of hemorrhage, and I did not learn that any of the subsequent nervous symptoms which follow the use of the knife showed themselves, notwithstanding that we might naturally suppose them more apt to follow. In this operation we must, on the whole, prefer the knife, from its greater rapidity, and the fact that, if properly used, none of those results against which the écraseur is supposed to provide, need be feared. If the écraseur be employed, a very long chain, and one of some strength is required to perform the vertical section, and if desired, the skin may be reflected to any desired extent before its application.

"I have seen circumcision performed on several occasions by means of the écraseur, but cannot see the object of its employment in such cases, as the knife accomplishes the object much better and more expeditiously. The hemorrhage, in no case of this sort, is an object worth taking so much pains to avoid. It is easily performed by separating the prepuce from the gland, either by drawing it forwards, and transfixing it with a double thread, whereby to form a peduncle, or, if practicable, introducing within the orifice a pair of forceps, between whose points and the glans the thread, and, finally, the chain, is placed. Adhesions between the prepuce and glans will prevent the use of the écraseur, and the laxness of the tissues make them very apt to get drawn into the canal of the instrument when the chain works home.

"Amputation of the penis is readily accomplished by means of the 'metallic ligature.' An elastic catheter being introduced into the canal, a needle is made to transfix both, a thread is tied behind the needle, and the chain made to divide the whole. The presence of the catheter prevents that obliteration of the canal which might result from the strong constriction exercised by the chain, while the integuments and mucous membrane lining the passage are so approximated by the action of the instrument, that hardly any wound results. Thus, then, there is no hemorrhage; the vessels are so closed that purulent absorption is obviated, and the wound may be said to be healed by the action which caused it. The difficulty of seizing a vessel in the stump of an amputated penis is well known to be, at times, very considerable, and this difficulty does not exist in the operation by the écraseur.

"The radical cure of varicocele is performed by Chassaignac as follows: The cord and veins being carefully separated, and the former drawn towards the middle line, three needles are made to transfix the parts between the cord and vessels, each needle being at a little distance from the other, and in a line with the axis of the vessels. Care must be taken that the needle lowest down does not transfix the tunica vaginalis. A ligature is placed firmly round the needle nearest the ring, so as to arrest the blood in the veins, and another ligature is twisted round behind the needles, so as to include them all, and form a peduncle. Thus far the patient should be kept in the erect posture, so as to render

the vessels full; he is now made to lie down, and chloroform being administered, the chain is applied behind the needles, and made to remove the knuckle included in the ligature. About half an inch of the veins is thus removed, and the resulting wound is brought together by suture. This operation takes from fifteen to twenty minutes. The rapidity and certainty of the result are the only advantages which this operation may be said to possess over the ordinary ones, while the extent of the wound is a disadvantage. I have not seen either hemorrhage, or erysipelas, or swelled testicle, nor yet troublesome erections, follow this operation when performed by the écraseur.

"The removal of piles is performed with wonderful facility by the écraseur. The tumour is seized by a vulsellum, and drawn out, when, if small, a ligature is simply thrown round its base, and the chain applied; or, if larger, a double thread is carried through its base, and tied so as to constrict it in two halves; or a needle may be left transfixing the base, and a ligature applied behind it. In many cases the points of the fingers will be sufficient to constrict the neck. Half a minute at least should be allowed between each movement, and ten or twelve consumed in the removal. When the anus is entirely surrounded by vascular piles, Chassaignac removes the whole at one grasp, by introducing a pair of his diverging forceps within the orifice, drawing it well out, and applying a ligature, so as to pedunculate the part, and then using the chain. A bougie must in this case be introduced within twenty-four hours, and that with great gentleness, to prevent tearing, so as to insure the patency of the gut, which is apt to be obliterated by the strong compression of the chain. The bowels should be kept quiet by opium for twenty-four hours. I have never seen any hemorrhage occur in the pretty numerous cases in which I have seen the écraseur employed; and I have seen a woman advanced in pregnancy thus with perfect safety relieved from large hemorrhoidal growths. The slowness and extreme pain and irritation, which are inseparable from the use of both the ligature and caustic, contrast disadvantageously with the operation with the écraseur, and the subsequent irritation of the bladder also appears much less when the chain is used. The very unfavourable state of the patient, the rapidity of the operation, and the bowels not being kept quiet afterwards, appear to me the causes of the fatal result reported in Liverpool. The bowels, in general, act with very little irritation, in thirty-six hours. In over a hundred cases, many of them of great severity, operated on in Paris, only one fatal result has followed, and in that instance from the breaking of the chain, the essential feature in the operation, as preventing purulent absorption—the cause of death—was wanting, viz., the closure of the vessels before their division. By means of the écraseur strangulated piles can be at once removed, and Chassaignac does not find a state of inflammation any counter-indication. Several patients operated on at the Lariboisière have returned to their work in three days; and in one case in which I saw an enormous hemorrhoidal tumour removed, no trace even of its site could be discovered a week after.

"I have never seen the écraseur used in prolapsus of the rectum.

"I have seen the lower part of the rectum removed for malignant disease twice, and in neither case was there any hemorrhage. It was thus performed: A long and much-curved trocar and canula was made to pass from the perineum, at a point anterior to the anus and external to the disease, up beyond the parts implicated in the gut, and outwards towards the coccyx posterior to the diseased tissues. The trocar being then withdrawn, the chain was passed along the canula and made to split the diseased mass in two after the tube was withdrawn. Long needles were then made to transfix the base of each lateral half, a ligature tied beyond them, and by means of two écraseurs worked simultaneously, both halves were removed at once. When we weigh the difficulties attending all operations of this kind, the great vascularity of the morbid parts, and the difficulty of commanding hemorrhage when it does occur, we must think favourably of the écraseur in such operations if they are to be performed at all. In three cases of extensive disease in which I have known the écraseur employed, one died of peritonitis, one has been well for eighteen months, and the third has also completely recovered.

"For the removal of polypi of the uterus or rectum the écraseur answers well.

The curved instrument and chain suits best. A very small chain, perhaps a wire, employed in the same way, will be found most convenient. The chain may either be introduced projecting in the form of a loop from the end of the instrument, or carried round the tumour before being attached. The inflammation and pain which follow the use of the ligature in these cases, and the presence for days of a strangulated and dead mass in the cavity are all avoided by the écraseur, while the hemorrhage, so troublesome, and even, at times, fatal, which may result from excision, is obviated. The method mentioned by Mr. Wells, at the Medico-Chirurgical Society, of tying the base of the polypus before excision, is, perhaps, better than even the écraseur. The weak state to which many patients are reduced before operation makes the avoidance of hemorrhage very desirable.

"I have not seen the os uteri excised by the écraseur, but having lately seen the operation done by scissors, I can appreciate its performance without hemorrhage. There was one patient at the Lariboisière who had been successfully operated on by the chain two and a half years before.

"Vesicular, erectile, and fungous tumours on the surface, on the labia and neighbourhood of the rectum, nævi, &c., are easily removed by the metallic ligature. The great point to be attended to is to raise them well up from the underlying structures to pass needles clear of them and under their base, to isolate them by a ligature, and to work the chain very slowly. The integument may be reflected from their side, both to save it and allow the chain to get well below them. Their extent, too, is thus better defined. The écraseur is not adapted for the removal of the mammæ. Hemorrhage can be here easily commanded, and when the skin is reflected, the operation is nearly accomplished.

"It seems absurd to lay open fistula in ano by the chain, but in those cases in which the external orifice is at a great distance from the anus, and we wish the track to heal by granulation, I have seen it advantageously employed.

"I have seen the chain used for the destruction of the intestinal valve in false anus, and its speedy result, together with the absence of any gangrenous action, which is so difficult to limit, and which attends Dupuytren's forceps, gives the écraseur certain advantages. An elastic tube is introduced through the parts some days before in such cases, so as to make a passage for the chain.

"In concluding these detached remarks, I would add that, whatever opinion may be formed of the écraseur, the absence of hemorrhage, which attends its use, is a fact which cannot be overlooked, and one which we may turn to good account. We may not in every case have the same fear of blood, expressed by M. Chassaignac; yet, it is very true that, independently of the harm its loss may cause in young children and weak persons, the power of avoiding it, and the incidental 'cutting,' which is the chief fear of a nervous patient, will often enable us to persuade persons to submit to necessary operations, who, if otherwise prevailed upon, might be seriously prejudiced by the mental alarm. I am, as much as any one, opposed to all 'unnecessary complications' in surgery, and particularly to any tendency to that mechanical surgery so rampant across the channel; but, though the boast of English surgery is that it accomplishes all operative interference with the forceps and scalpel, yet we may, in striving for simplicity, throw away an obvious advantage. To propose the performance of lithotomy or amputation with the écraseur is simply absurd; but I am convinced that, if restricted to its own sphere, and employed for those purposes to which it may legitimately be applied, the écraseur is a most useful addition to our armamentarium. For many purposes, I know of no means which can be thought to equal it, except the galvanic wire, which I had the pleasure of seeing in the hands of Professor Middledorpf, of Breslau, adapted to the uses of surgery in such a way that, if it can be so brought into general use, it must supersede, in most cases, every other contrivance. That the écraseur will ever supplant the knife in most of the cases for which it has been proposed, I do not believe, but that it may in some I sincerely hope."